

REMARKS

Reconsideration and allowance of the subject application. Upon entry of this Amendment, claims 1-19 are pending in the application. In response to the Office Action (Paper No. 23), Applicant respectfully submits that the pending claims define patentable subject matter.

As a preliminary matter, Applicant thanks the Examiner for indicating that claims 16-19 are allowed and claims 5, 6, 8 and 9 would be allowable if rewritten in independent form.

Claim 14 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner maintains that claim 14 is improperly dependent upon another multiple dependent claim. By this Amendment, Applicant has amended claim 14 to remove the dependency upon multiple dependent claim 12. Accordingly, the Examiner is requested to remove the § 112, second paragraph, rejection.

Claims 1-4 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Mihara (JP 405303076) in view of Okada et al. (USP 4,800,382; hereafter "Okada").

Claims 7 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mihara in view of Okada and Surguy (USP 5,233,338). Claims 10, 11 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito et al. (USP 6,172,662; hereafter "Ito"). Claims 13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Surguy.

Applicant respectfully traverses the prior art rejections for the reasons set forth below.

Claims 1-4 and 7-9

Independent claim 1 is directed to “[a] method for driving a liquid crystal display apparatus.” Claim 1 requires:

scanning successively a plurality of scan lines in a first field of a frame for display;

simultaneously resetting the scan lines in the first field after the scan lines are successively scanned in the first field;

scanning successively the scan lines in a second field of the frame for display in an order reverse to that in the first field; and

simultaneously resetting the scan lines in the second field after the scan lines are successively scanned in the second field.

An exemplary embodiment of the method of claim 1 is illustrated in Figure 10 of the present application.

With regard to independent claim 1, the Examiner asserts that Mihara (Figure 4) discloses all of the features of the claimed invention except for “simultaneously resetting the scan lines in the first [and second] field[s] after the scan lines are successively scanned in the first and second fields”. However, the Examiner asserts Okada (Figure 6) discloses simultaneously erasing the scan lines. The Examiner further asserts that “it would have been obvious to ... allow the erasure step, as taught by Okada, in a driving method similar to that which is taught by Mihara, in order to reduce flickers in the display device.”

Appellant respectfully submits that independent claim 1 would not have been rendered obvious in view of Mihara and Okada because the cited references, alone or combined, do not

teach or suggest all of the features of the claimed invention, and one of ordinary skill in the art would not have been motivated to combine and modify the teachings of the cited references to produce the claimed invention.

As shown in Figure 4, Mihara discloses applying a negative pulse $-V_2$ (erasing in black) and then applying a positive pulse V_1 (write in white) to each successive scan line. In a first block of a frame, the scan lines are scanned from top to bottom. In a second block of the frame, the scan lines are scanned from bottom to top (i.e., in reverse order).

As shown in Figure 6, Okada discloses simultaneously erasing the scan lines applying a negative pulse $-2V_0$ (i.e., erasing in black) and then successively scanning the scan lines by applying a positive pulse $2V_0$.

Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify the driving method of Mihara based on the teachings of Okada. In particular, nowhere does Okada disclose that simultaneously resetting the scan lines reduces flickers in the display device, as the Examiner alleges.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, there must be some suggestion or motivation to modify or combine the reference teachings.¹ The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggest the desirability of the combination. *In re Mills*, 916 F.2d 680, 16

¹ “To support the conclusion that the claimed invention is directed to obvious subject matter, either references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference.” *Ex parte Clapp* 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

USPQ2d 1430 (Fed. Cir. 1990). Moreover, the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient to establish a *prima facie* case of obviousness. (See *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993); and *Al-Site Corp. v. VSI Int'l Inc.*, 50 USPQ2d 1161 (Fed. Cir. 1999)). However, in the present case, Applicant respectfully submits that the Examiner has not provided any objective reasons why one of ordinary skill in the art would have been motivated to modify Mihara or pointed out any portion of Okada which suggests the desirability of modifying Mihara's teachings.

Moreover, even if the driving method of Mihara is modified based on the teachings of Okada, which Applicant submits is incorrect, the result would be a driving method wherein during a first field (block), the scan lines are simultaneously erased by applying a negative pulse and then successively scanned from top to bottom by applying a positive pulse, and during a second field (block), the scan lines are simultaneously erased by applying a negative pulse and then successively scanned from bottom to top by applying a positive pulse. In other words, the scan lines are simultaneously erased at the beginning of the field prior to being successively scanned. On the other hand, the claimed invention requires simultaneously resetting the scan lines in a field after the scan lines are successively scanned in the field.

The Examiner apparently recognizes this deficiency of the combined references, and asserts that:

it would have been obvious to ... move the reset period from the start of the sub-frame as shown in Fig. 6 of Okada to the end of the sub-frame (for example move the reset period C1 to the end of the display period C2). This would have been obvious when Okada is combined with Mihara as shown in Fig. 4 of Mihara

because the scan lines are rescanned in the reverse direction and would therefore need to be reset before the display system scans from the bottom row to the top row (i.e., in Fig. 4 of Mihara, after row S_n is scanned, the simultaneous reset would occur for all scan lines so the pixels are ready for information to be written during the second sub-frame, i.e., from S_n to S_1 (reverse order)).

However, as discussed above, both Fig. 4 of Mihara and Fig. 6 of Okada teach for each field (frame) the scan lines are erased first and scanned second. That is, as the Examiner correctly notes, Okada teaches the reset period C1 occurs at the start of a frame. Similarly, Mihara teaches each scan line is erased prior to data writing and in the same field in which the writing occurs. In other words, Mihara teaches that after a scan line is written to in one field, the scan line is not erased until the next field. Thus, neither reference provides the requisite motivation for simultaneously erasing the scan lines after the scan lines are scanned and in the same frame in which the scan lines are scanned.

Accordingly, the Examiner's assertion "it would have been obvious to ... move the reset period from the start of the sub-frame as shown in Fig. 6 of Okada to the end of the sub-frame" is not supported by the teachings of the cited references. Similarly, the Examiner's alleged motivation that "the scan lines ... need to be reset before the display system scans from the bottom row to the top row" does not provide any suggestion or motivation that a scan line needs to be erased in the same field in which the scan line is scanned. As previously stated, the characterization of certain limitations or parameters as obvious does not make the claimed invention, considered as a whole, obvious. It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This burden can only be satisfied by an objective teaching in

the prior art or by cogent reasoning that the knowledge is available to one of ordinary skill in the art. See *In re Lulu*, (747 F.2d 703, 223 U.S.P.Q. 1257 (Fed. Cir. 1984)).

In view of the above, Applicant respectfully submits that independent claim 1, as well as dependent claims 2-4 and 7-9, should be allowable because the cited references, alone or combined, do not teach or suggest all of the features of the claimed invention, and one of ordinary skill in the art would not have been motivated to combine and modify the teachings of the cited references to produce the claimed invention.

Claims 10-15

Independent claim 10 is directed to “[a] method for driving a liquid crystal display element forming a scan line in a frame composed of a first field and a second field.” Claim 10 requires:

writing data a plurality of times in the scan line in the first field by use of a data signal having a period corresponding to the frame, wherein the data signal has a first signal voltage during the first field; and

writing data a plurality of times in the scan line in the second field by use of the data signal having the period corresponding to the frame, wherein the data signal has a second signal voltage during the second field and a polarity of the first signal voltage is opposite to a polarity of the second signal voltage.

An exemplary embodiment of the method of claim 10 is illustrated in Figures 24 and 25 of the present application.

Applicant respectfully submits that the claim 10 would not have been rendered obvious in view of Ito because the cited references do not teach or suggest a data signal having a period

corresponding to the frame and the polarities of the data signal voltage are opposite in the first the first and second fields, as claimed. Instead, as shown in Figure 4 of Ito, the data signal applied to the data line Y1 becomes alternately positive and negative a plurality of times during each of the fields 1f-4f.

Independent claim 11 is directed to “[a] method for driving a liquid crystal display element forming a scan line.” Claim 11 requires:

writing data a plurality of times in a frame by applying to a data line of the liquid crystal display element a signal voltage having a polarity which becomes alternately positive and negative a plurality of times during the frame at a predetermined frequency, wherein the data is written each time the polarity of the signal voltage is positive and each time the polarity of the signal voltage is negative.

An exemplary embodiment of the method of claim 11 is illustrated in Figures 26 and 27 of the present application.

Applicant respectfully submits that it is quite clear that neither Ito does not teach or suggest the subject matter of claim 11. Although the polarity of the signal voltage applied to the data line (Y1) changes a plurality of times during the frame, data is not written each time the polarity of the signal voltage is positive and each time the polarity of the signal voltage is negative. Instead, data is written only once per field.

Accordingly, Appellant respectfully submits that independent claims 10 and 11, as well as dependent claims 12-15, should be allowable because the applied references do not teach or suggest all of the features of the claims.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 09/256,346

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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